

All of this research was incorporated into the design and alignment concepts, and the result was a series of proposed wildlife crossing structures for the entire length of the project. (Fish & Wildlife Crossings – Proposed Crossing Structures for US 93, p. 32) Each individual crossing is presented in greater detail in the **Wildlife Crossings Workbook**.

For many of the wildlife crossing structures to function properly, it will be necessary to use some type of fencing to help control movement and funnel wildlife toward the crossing structure. Eight-foot high page wire fencing designed specifically for wildlife control is recommended for segments of the reconstructed US 93. This fencing is similar to that used for the Trans-Canada Highway in Banff. (Wildlife Fencing – Concepts for US 93, pp. 33-34)

Opportunities and Constraints

The inventory and analysis phases of the project lead to the delineation of “Opportunities and Constraints” areas based on the landscape and cultural context. The opportunities and constraints mapping identified zones of opportunity where natural, cultural, and scenic resources can be dodged or only minimally affected by potential highway improvements, and areas of constraint where resources would be adversely affected by highway improvements. This information was used as the basis for developing initial design concepts for the reconstructed road and roadside improvements and visitor amenities.

In order to make the project more manageable, the fourteen landscapes were combined into five separate design segments. The five segments are as follows:

- Evaro Design and Alignment Concept (p. 18)
- Arlee to Ravalli Design and Alignment Concept (p. 21)
- St. Ignatius Design and Alignment Concept (p. 23)
- Ninepipe Design and Alignment Concept (p. 26)
- Ronan to Polson Design and Alignment Concept (pp. 28-29)

Design and Alignment Concepts

For each design segment, we explored a wide range of design concepts and recommendations for the reconstructed road. The three governments agreed that all design concepts should be considered unless there was consensus to remove one from consideration. An iterative process was developed for each design segment that consisted of generating the conceptual ideas, reviewing those concepts with the three governments – Federal Highway Administration (FHWA), Montana Department of Transportation (MDT), and the Confederated Salish and Kootenai Tribes (CSKT) – and the prime consultant – Skillings-Connolly, Inc. – and then refining the design concept.

In formulating the design concepts over the length of the road corridor, a decision was made to start on the south end of the reservation at the community of Evaro and proceed north with the concept development. For each of the five design segments, ideas and concepts were generated for road alignment, lane configuration, fish and wildlife crossing structures, wildlife fencing locations, interpretive opportunities, community entry signs, and other roadway features.

In addition to the general recommendations for the five design segments, detailed concepts were developed for specific areas along the corridor where there were special concern.

Following is a brief overview of the places where additional focus was needed to address the unique conditions and issues associated with that place.

- The Evaro Hill area is a major wildlife corridor that links the grizzly populations of the Mission Range / Bob Marshall to the Bitterroot grizzly bear recovery zone to the west. How wildlife crossings are incorporated into the road design is critical if wildlife is going to be able to move safely through the area. (Evaro Hill Wildlife Crossings, p. 19)

In the community of Arlee, we looked at how a “couplet” could improve traffic flow and safety while maintaining the visual and physical character of the community. (Arlee Design Concept, p. 20)

Ravalli Hill was identified as a possible site for a new visitor center; our concept was to relocate the visitor center to the west of the existing road in order to take advantage of views of the mountains and valley, and to have closer proximity to the Bison Range. (Ravalli Hill Design Concept, p. 22)

The Ninepipe area is significant from both a cultural and ecological standpoint. Because of the sensitivity and complexity of the thousands of potholes that make up this rich and diverse habitat, it was imperative to look at the highway within the context of the surrounding landscape. (The Value of Ninepipe, p. 24) Due to the ecological importance of the wetland complex, the appropriateness of mitigating problems caused by the current alignment came into question. As a result, an alignment that would swing westward around the wetland complex was also considered. (Road Effects of Existing Alignment in Ninepipe, p. 25) Both of these concepts were explored on a conceptual level in order to determine the most appropriate actions for the Ninepipe area, and to see if additional research was needed before final design decisions could be made. (Ninepipe Design and Alignment Concepts, p. 26)

For the community of Ronan, alignment concepts were evaluated for a full range of alternatives, including keeping the new road on existing alignment with some improvements to providing a bypass around the community. (Ronan Alignment Concepts, p. 27) In Pablo, a cross-section was developed to accommodate four lanes of traffic while still maintaining the character and identity of the community. (Pablo Design and Alignment Concept Cross-sections, p. 30)

For the highway segment between Caffery Road and Route 35, we were concerned with integrating the horizontal and vertical alignment of the reconstructed road with the hilly terrain and maintaining views of Flathead Lake. (Caffery Road to Route 35 Design and Alignment Concept, p. 31)

Use of Design and Alignment Concepts

These *Landscape Architects Design and Alignment Concepts*, as presented herein, represent a consensus among the three governments – FHWA, MDT, and CSKT – regarding the design direction and standards for the reconstruction of US 93 from Evaro to Polson. What are not shown are the dozens of ideas and concepts that were explored and evaluated. Some of these concepts were quickly discarded, others were revised, discussed, and then rejected, and finally some evolved into the design and alignment concepts contained in this document. The graphics represented in this report are reproductions of larger presentation boards. As a result, some labels and notes may not be legible. Refer to page 35 for clarification on the content of these labels and notes.

Since it was important that the entire project setting be seen as a whole (Sense of Place Continuum), decision making was never broken into increments. Final consensus was not sought until design and alignment concepts had been developed for the entire corridor.

The *Design Components Workbook* was completed to record the spatial location of the components (as recommended in the *Landscape Architects Design and Alignment Concepts* herein) as well as specific areas for land use control and environmental mitigation identified by the CSKT.

The *Design Guidelines and Recommendations* build upon the ideas established in the *Landscape Architects Design and Alignment Concepts* and are intended to provide landscape architects, designers, planners, engineers, and others involved with transportation-related activities on the Flathead Indian Reservation with a consistent design philosophy and design style.